TABLE 3. INCREASES IN OPERATING COSTS FOR SELECTED VEHICLES AS ROAD CONDITIONS DETERIORATE (In percent) a/

Condition b/	Small Auto	Small Single-Unit Truck c/	Large Combination Truck d/
Good	0	0	0
Fair	9	5	8
Poor	35	21	36

SOURCE: Federal Highway Administration, Office of Highway Planning, Vehicle Operating Costs, Fuel Consumption, and Pavement Type and Condition Factors, Final Report (June 1982), Appendix A.

a. Operating costs include fuel, oil, vehicle maintenance and repair, and depreciation, but exclude labor costs. Cost changes assume 55 miles per hour and no grades.

b. In this illustration, a pavement serviceability rating of 4.0 is used to represent a typical good road; 3.0 a road in fair condition; and 1.5 a road in poor condition.

c. A two-axle vehicle.

d. A five-axle semitrailer.

increase if repairs are not made in a timely fashion. Eliminating all sections of poor road from the Interstate highways and keeping the system in repair would cost an estimated $3.2 billion a year throughout the rest of the 1980s. (At a 90 percent federal match, federal costs would average $2.9 billion.)

In addition to repairs, planned reconstruction projects would cost $4.4 billion per year. Most projects classified as reconstruction are strictly of state or local importance, and this costly category of work appears to be of substantially lower federal priority than repairing and completing the system. For example, a little over half of all reconstruction projects are

less essential projects that were dropped from the official definition of the Interstate system last year. The remainder represent additional projects that are important to the states (widening and adding interchanges, for example) but that are only secondarily related to the provision of a national, interconnected road network. Nevertheless, the federal program has allotted some resources for them partly as a workable mechanism for scaling back the dimensions--and costs--of a functioning Interstate system (see footnote 9). If the federal government financed a quarter of these locally important projects, $1.1 billion a year would be needed.

Non-Interstate Roads

Other parts of the Federal-Aid highway system--the Primary, Secondary, and Urban systems--also face problems of deferred repair, though not quite as severe as does the Interstate. The Federal Highway Administration reports that in 1978 about 6 percent of Primary routes were in poor condition, about 9 percent of the Secondary system, and 7 percent of the Urban system (see Table 4). In contrast to the Interstate system, however, these fractions were generally slightly better than in earlier years.

Even though the fraction of Primary, Secondary, and Urban routes in poor condition has not increased recently, the fraction of these systems in only fair condition is significantly higher than for the Interstate and portends a major emerging problem. Over 50 percent of the Primary, Secondary, and Urban systems were in only fair condition in 1978, about 10 percentage points more than in 1972. This suggests that the proportion of roads in poor condition is likely to increase rapidly unless more remedial work is done. While the condition of roads not included in the Federal-Aid system is less certain, it appears to be similar to or worse than that of Secondary and Urban systems.

Over the next 15 years, the total costs of preventing further deterioration in the Primary, Secondary, and Urban systems are estimated at $53 billion, $60 billion, and $42 billion, respectively. 7/ These sums include the cost of adding some road capacity in line with expected growth in traffic. If federal support for these programs continues in the same proportion to total spending as in the past, annual outlays over the next four years will be $2.9 billion, $1.0 billion, and $0.7 billion for the Primary, Secondary, and Urban sytems, respectively. (This assumes that the federal government would continue to pay about 20 percent of total capital

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7. Estimates from Federal Highway Administration, The Status of the Nation's Highways: Conditions and Performance (January 1981), adjusted for inflation.

TABLE 4. PAVEMENT CONDITIONS ON THE FEDERAL-AID HIGHWAY SYSTEM IN 1978

Federal-Aid System	Condition of Road (percent)		Change From 1975 (percentage points)		Change From 1972 (percentage points)	
	Poor	Fair	Poor	Fair	Poor	Fair
Interstate						
Rural	7 a/	30	+3	+8	+7 b/	N/A
Urban	6 a/	36	+3	+7	+6 b/	N/A
Primary c/						
Rural	6	52	-1	+6	-2	+8
Urban	6	53	0	+7	0	+12
Secondary d/	9	66	-1	+6	0	+8
Urban e/	8	59	-1	+4	-1	+11

NOTE: N/A = Not available.

SOURCE: Federal Highway Administration, The Status of the Nation's Highways: Conditions and Performance (January 1981), pp. 74-75.

a. The FHWA report used as the source for this table showed 9 percent of the rural Interstate in poor condition and 8 percent of the urban Interstate. The FHWA has revised these estimates downward as a result of recently discovered data errors.

b. Estimate by CBO.

c. Data for arterial roads.

d. Data for rural collector roads.

e. Data for urban collector roads.

spending for the Secondary and Urban roads, and about 70 percent of the total for the Primary system.)

Bridge Replacement

Bridges are typically expected to last for about 50 years before requiring major reconstruction work or replacement. Fully 30 percent of all Federal-Aid bridges were built before 1940, and 43 percent of other bridges are even older.

Replacing or rehabilitating all the nation's deficient bridges would cost about $47.6 billion (in 1981 dollars). 8/ About half of this ($24.6 billion) would be for bridges on the Federal-Aid system, including $1.7 billion for Interstate bridges and $9.9 billion for bridges on the Primary system. The costs for the first four years of a 15-year program to replace or rehabilitate these bridges would be about $1.9 billion a year. If the federal government continued to finance about 70 percent of bridge costs on the Federal-Aid system, $1.3 billion would be required as the federal share.

The Federal Highway Administration has characterized 22.7 percent of the nation's 574,000 bridges as structurally deficient--roughly 10 percent of the bridges on the Federal-Aid system and one third of other bridges. While most of these structurally deficient bridges are still safe for light vehicles, it is sometimes necessary to reroute large trucks. Only 21.6 percent of the structurally deficient bridges are on the Federal-Aid system, but these tend to be the largest, most expensive ones. In addition to bridges with major structural problems, another 21.9 percent of all bridges are functionally obsolete--that is, they do not meet current FHWA design standards or have inadequate capacity for existing traffic volumes.

Interstate Completion

Parts of the Interstate Highway System--less than 5 percent--remain uncompleted. The Congress has set a target date of 1990 for completion of the remaining 1,575 miles. As currently defined, completion of the system, which has come to include upgrading parts that are already open to traffic, will cost the federal government a total of $32.6 billion (in 1982

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8. Federal Highway Administration, Highway Bridge Replacement and Rehabilitation Program, Third Annual Report to the Congress (March 1982).

dollars). 9/ This high cost is a reflection of several factors: inflation; the location of many of the remaining routes in urban areas; and the inclusion of environmental or safety work that was not originally conceived as part of the Interstate system. The current authorizations of $3.1 billion a year would need to be increased by $2.0 billion to complete the system as scheduled. Otherwise, the 1990 deadline can only be met by substantially reducing the amount of construction. 10/ As a functioning, interconnected national system, however, the Interstate is virtually complete. If gaps of largely local significance that have not been approved for construction were excluded, only $2.2 billion a year would be needed to complete the system. This sum could be reduced to $1.1 billion if local gaps that have been approved but not yet placed under construction were excluded as well.

Summary of Estimates of Highway Costs

Over the next four years, the expenditures necessary for the Federal-Aid system would total $27.7 billion a year, with the estimated federal share being $15 billion annually and the state share almost $13 billion. The greatest federal expenditures would be for Interstate completion, Primary system repair, Interstate repair, and bridge repair (see Table 5). The division of costs between federal, state, and local governments is assumed to remain fixed. Thus, while $15 billion represents about a 70 percent increase in federal highway spending, a similar 70 percent increase in spending by state and local governments is assumed as well.

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9. The direct costs of completing the Interstate system depend on the degree to which local governments take advantage of Interstate transfers. Under this provision, local governments, with the approval of their state, may decide not to build particular Interstate segments. If the Federal Highway Administration rules that the segment is not required for a national, interconnected highway system, the locality can "trade" this authorization for capital investments in other highways or in mass transit. Unlike most highway programs, these funds must be appropriated, since outlays for highway and non-highway substitute projects are paid from general revenues, not the Highway Trust Fund. While greatly increased use of this provision would not change total federal highway costs, it would reduce the direct costs of completing the Interstate. The cost estimates used in this paper assume that a total of $2.5 billion of Interstate segments will be withdrawn in the future.

10. For a full analysis of the issues involved in completing the Interstate System, see Congressional Budget Office, The Interstate Highway System.

TABLE 5. ESTIMATE OF MAJOR NATIONAL HIGHWAY NEEDS AND THE FEDERAL SHARE, 1983-1986

Area of Need	Average Annual Authorizations 1983-1986 (billions of dollars) a/ Total Estimated Needs	Federal Share of Estimated Needs	State and Local Share of Estimated Needs	Effective Federal Share (percent) b/
Completion of Interstate System by 1990	5.7	5.1 c/	0.6	90
Interstate Repair	3.2	2.9 c/	0.3	90
Interstate Reconstruction	4.4	1.1 c/	3.3	25 d/
Primary	4.1	2.9 e/	1.2	70
Bridge Repair	1.9	1.3 f/	0.6	70
Secondary	5.2	1.0 e/	4.2	20
Urban	3.2	0.7 e/	2.5	20
Total g/	27.7	15.0	12.7	54

a. The estimates are for a four-year federal highway program for 1983-1986. After 1986, authorizations would have to be increased to adjust for inflation.

b. Department of Transportation, Final Report on the Federal Highway Cost Allocation Study (May 1982), p. IV-14. These represent federal shares of highway spending after accounting for state-only projects.

c. Congressional Budget Office, The Interstate Highway System: Issues and Options (June 1982).

(Continued)

TABLE 5. (Footnotes Continued)

d. Congressional Budget Office assumption.

e. Federal Highway Administration, The Status of the Nation's Highways: Conditions and Performance (January 1981), Table 5-1, p. 154 with adjustments to reflect inflation and the effective federal share as shown in the fourth column. Assumes a 15-year program with future adjustments for inflation.

f. Federal Highway Administration, Highway Bridge Replacement and Rehabilitation Program, Third Annual Report to the Congress (March 1982). Assumes a 15-year program with future adjustments for inflation, and is restricted to the Federal-Aid system.

g. Excludes Interstate transfer grants for highways, safety grants, recreational roads, and roads off the Federal-Aid system.

CHAPTER III. THE HIGHWAY TRUST FUND

The creation of the Highway Trust Fund in 1956 established a separate account whereby payments from road users were set aside and reserved for federal highway programs. 1/ This approach kept the cost of roadbuilding from burdening other taxpayers, ensured that the taxes paid by road users would be sent back to them in the form of better roads, and permitted an unprecedentedly large highway program--the Interstate system--to begin and proceed uninterrupted.

FUND REVENUES

The Highway Trust Fund is simple in concept: road users pay into the fund in some rough proportion to their use, and expenditures are made from the fund to support federal highway programs. Users pay through separate taxes on gasoline, diesel fuel, special motor fuels, tires, tubes, tread rubber, new trucks, truck parts, lubricating oil, and heavy vehicles (see Table 6). The receipts from these taxes are placed in the Highway Trust Fund as they are collected, and subsequently withdrawn to pay for eligible construction or repair projects.

Under most federal highway programs financed from the trust fund, the federal government pays some fixed proportion of a project's cost, the rest being paid by the state concerned. For Interstate projects, the federal government pays 90 percent of the cost, while for most other federal projects it pays 75 percent. Most states finance their share of the cost through their own road user taxes, which are often paid into state trust funds dedicated to road programs. Indeed, almost every state has such dedicated funds, and in 1982 the average state tax on gasoline was ten cents per gallon--two and a half times the federal tax of four cents per gallon (see Appendix C). Similarly, state spending on roads in 1982 was almost twice the level of federal spending.

Although the federal share of cooperative federal/state highway projects is about 75 percent, the states nonetheless carry the major burden of highway expenditures because they support many roads and projects that are not eligible for federal aid, and because they also finance day-to-day operations such as grass mowing and snow removal that receive no federal support.

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1. For more details, see Congressional Budget Office, Highway Assistance Programs: A Historical Perspective (February 1978).

TABLE 6. CURRENT HIGHWAY EXCISE TAX RATES

Tax	Current Rate a/
Motor Fuels	
Gasoline	4 cents per gallon
Diesel	4 cents per gallon
Special motor fuels	4 cents per gallon
Rubber	
Tires	10 cents per pound
Tubes	10 cents per pound
Retreads	5 cents per pound
New Trucks and Trailers (Over 10,000 pounds gross weight)	10 percent of manufacturer's wholesale price
Annual Heavy-Vehicle Use Tax	$3 per 1,000 pounds when gross weight exceeds 26,000 pounds
Truck Parts and Accessories	8 percent of manufacturer's wholesale price
Lubrication Oil (For highway use)	6 cents per gallon

NOTE: In addition, several groups of highway users are exempted from paying certain taxes. These include most state and local governments, most users of buses, and producers of gasohol. (See Table A-3 in Appendix A.)

a. In most cases, these are temporary rates that would drop to lower, permanent rates if the Highway Trust Fund was abolished.

REVENUE PROJECTIONS

In 1982, federal highway user taxes will raise about $6.6 billion, of which more than two-thirds will come from taxes on motor fuel (see Table 7). In addition, the Trust Fund will earn about $1.1 billion in interest because it has a substantial cash balance--projected to be about $9.0 billion at the end of fiscal year 1982. (This balance does not represent a surplus, however, since it will be more than offset by the cost of ongoing projects and other existing liabilities as these draw on the fund in future years. These existing liabilities total about $19.3 billion, leaving the fund with about $10.3 billion in unfunded liabilities. This is discussed further in Chapter V.)

When interest is included, the total receipts to the trust fund will be around $7.7 billion in 1982. This is only $100 million more than total receipts five years ago.

Sources of Revenue

The most important sources of trust fund revenues are the tax on motor fuel (gasoline and diesel), interest on the cash balance, excise taxes on new truck sales and on truck parts, and the heavy vehicle use tax. The Treasury Department has projected the net receipts of each of these taxes. The projections are discussed briefly below, and will be used in the next chapter.

Motor Fuel Taxes. Receipts from the four-cents-per-gallon tax on motor fuels are estimated at $4.6 billion for 1982 and account for 68 percent of tax revenues, exclusive of interest. These receipts dropped by about 10 percent or $400 million in 1980, in response to large price increases in fuel during the Iranian crisis. Higher prices and difficulty in obtaining fuel encouraged people to economize by driving less. Receipts should show little change in the foreseeable future and are expected to average about $4.4 billion annually despite continued growth in vehicle miles travelled. Growth in diesel consumption by both trucks and cars is expected to offset the decline in gasoline use as more fuel-efficient cars continue to replace older vehicles.

Interest. The second largest source of revenues, about $1.1 billion, is the interest on the cash balance in the trust fund. If current policies continue, interest receipts will diminish as the cash balance declines and as interest rates recede from their current high levels.

Excise Taxes. Next in importance is the 10 percent excise tax on new truck sales. This tax is quite volatile, reflecting inflation, general economic conditions, and the level of truck sales. This and the 8 percent tax on truck parts are the only highway taxes that respond to inflation. Although depressed in 1981 because of the extremely low level of truck sales, resumption of economic growth will probably make these receipts increase

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TABLE 7. RECENT TRENDS IN FEDERAL HIGHWAY EXCISE TAX RECEIPTS, 1978-1982 (In millions of dollars)

Tax	1978	1979	1980	1981	1982 Estimate a/
Gasoline (Net)	4,237	4,337	3,898	3,758 b/	3,969
Diesel	484	497	523	561	597
Total Motor Fuel Taxes	4,722	4,834	4,421	4,319	4,566
Truck Sales	851	944	912	664	771
Truck Parts	188	225	253	234	231
Heavy Vehicle Use Tax	246	235	277	237	289
Tires, Tubes, and Tread Rubber	818	867	680	644	667
Lubricating Oil (Net)	80	84	77	76	80
Total Excise Taxes	6,905	7,189	6,620	6,174	6,604
Interest on Cash Balance	662	857	1,027	1,129	1,079
Total Highway Trust Fund	7,567	8,046	7,647	7,303	7,683

a. Estimate by Department of the Treasury.

b. Excludes $131 million transferred from an escrow account for the Virgin Islands and Puerto Rico.

more rapidly over the next few years--over 10 percent a year for the tax on new truck sales and 6 percent a year for the tax on parts.

Heavy Vehicle Use Taxes. The heavy vehicle use tax is paid only by vehicles over 26,000 pounds gross weight. The tax rate, $3 per 1,000 pounds or $240 per year for vehicles at the 80,000 pound federal limit, has not been adjusted for inflation but remains at the rate set in 1961. Receipts from this tax will grow slowly--about 1 percent per year--reflecting slow growth in the fleet of heavy trucks. The other highway taxes, those on tires, tubes, tread rubber, and lubricating oil, will also grow very slowly in future years because improvements in tires and oil have reduced consumption relative to travel. These tax rates have also not been increased for over 20 years.

Growth in Future Years

Together, the projections sketched above indicate that the growth of receipts in future years will be slight. The Treasury Department projects net receipts (in nominal dollars) from federal highway excise taxes as growing about 2 percent a year from 1980 through 1987 (see Table 8). 2/ After including the effect of lower interest payments, total Highway Trust Fund receipts will grow by only about 1.3 percent a year. Even if highway inflation averages only 7 percent a year over the next five years, this means that the real purchasing power of the Highway Trust Fund will decline by more than 5 percent a year. Thus, the lag between needs and resources promises to increase unless some action is taken either to increase highway revenues or to restrict federal support to a smaller set of highways.

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2. A comparison with 1980 is used since receipts in both 1981 and 1982 were affected by economic conditions in general and very low truck sales in particular.

TABLE 8. FORECAST OF HIGHWAY TRUST FUND TAX RECEIPTS, 1980-1987 (In millions of dollars)

Tax	1980	1983	1984	1985	1986	1987	Annual Growth Rate 1980-1987 a/
Gasoline (Net)	3,898	3,823	3,762	3,713	3,647	3,669	(0.9)
Diesel	523	608	645	681	719	758	5.4
Total Motor Fuel Taxes	4,421	4,431	4,407	4,394	4,366	4,427	0.0
Truck Sales	912	1,055	1,395	1,487	1,684	1,795	10.2
Truck Parts	253	277	301	322	344	367	5.5
Heavy Vehicle Use Tax	277	268	273	278	282	286	0.5
Tires, Tubes, and Tread Rubber	680	670	673	680	682	698	0.4
Lubricating Oil (Net)	77	80	80	80	80	80	0.5
Total Excise Taxes	6,620	6,781	7,129	7,241	7,438	7,653	2.1
Interest on Cash Balance b/	1,027	1,040	950	880	780	740	(4.6)
Total Highway Trust Fund	7,647	7,821	8,079	8,121	8,218	8,393	1.3

SOURCE: Office of Tax Analysis, Office of the Secretary of the Treasury, July 19, 1982.

a. Fiscal year 1980 is used as a base since the recession has distorted receipts for 1981 and 1982, particularly in truck sales.

b. Estimate by Congressional Budget Office assuming no change in the cash balance in the fund and using CBO's forecast of interest rates.

CHAPTER IV. THREE APPROACHES TO HIGHWAY POLICY

The resources of the Highway Trust Fund are inadequate to keep the Federal-Aid highways in repair and to complete the Interstate Highway System. This financial discrepancy will grow in future years if current policies continue. The impasse could be resolved in two ways: by devoting more funds to federal highway programs so that repairs could be made as needed; or by targeting available funds on those parts of the highway program most crucial to the federal interest, with other activities being turned back to the regions, states, or localities involved. This chapter examines each of these approaches in comparison with a continuation of current spending patterns. The two alternatives are:

- Increased program levels, corresponding to the proposal (H. R. 6211) reported by the House Public Works and Transportation Committee in 1982; and

- Targeting of federal support exclusively on the Interstate and Primary systems.

The next three sections examine the outlook for highway spending under the current level of funding and under each of the two alternatives. The consequences of the three strategies are appraised in Chapter V. For each option, it is assumed that, along with the cash balance in the trust fund, highway user taxes would be increased sufficiently to cover program costs over the next four years. In particular, the current spending option is assumed to continue until 1987 without a tax increase, even though this could not be sustained indefinitely because the cash balance in the trust fund would eventually be exhausted. The increased program option is assumed to be financed by a tax increase equivalent to an increase of four cents per gallon in the tax on motor fuels, as was proposed in H. R. 6211 and has been proposed most recently by the Administration. The redirected federal role option is assumed to be financed by current highway user taxes, although alternative financing approaches for this option are also addressed.

CONTINUATION OF CURRENT SPENDING

Assuming the level of authorizations proposed by the Senate Committee on Environment and Public Works bill (S. 2574), the federal highway program could continue until 1987 without increasing road-user taxes, although such an approach would draw down a large part of the cash balance in the Highway Trust Fund. Authorizations are assumed to start at $8.7 billion in 1983 and increase to $10.3 billion in 1986. For comparison, authorizations from the Highway Trust Fund totalled about $8.6 billion in 1982.

Funds for repair and reconstruction of the Interstate program would climb from $800 million in 1982 to $1.1 billion in 1983. There would be a small increase in authorizations for Interstate construction from $3.1 billion in 1982 to $3.3 billion in 1983 and $3.5 billion in 1986. Other funding changes would be relatively modest, with an increase in the bridge program and a decrease for the Urban system. More important, the Senate bill would reduce the federal matching share of Secondary and Urban roads from 75 percent to 50 percent, the level that prevailed from 1920 to 1974. About 20 smaller programs, many of them authorized from general revenues, would be eliminated entirely. 1/

INCREASED PROGRAM LEVELS

Increased program levels such as those embodied in H. R. 6211 would move spending substantially above current policy. Overall, this option would increase current spending from the trust fund by over 50 percent, financing it through an increase in highway user fees of $4.4 billion a year--equal to four cents per gallon of motor fuel. 2/ Authorizations from the Highway Trust Fund would start at $12.7 billion in 1983, and increase to $14.5 billion by 1986.

The largest increase, from $800 million in 1982 to $2.1 billion in 1983, would be for repair and reconstruction of the Interstate system. Authorization for construction of new routes needed to complete the Interstate system would be increased from $3.1 billion in 1982 to $4.0 billion in 1983. Even so, this would not suffice to complete the system, as currently planned, by the 1990 deadline. 3/ Significant increases are also included for the Primary system (from $1.5 billion in 1982 to $2.0 billion in 1983) and the bridge program ($0.9 billion to $1.5 billion). The Secondary program would receive a smaller increase, while the Urban system would be held at its current $800 million level.

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1. This option is based on specific legislation proposed by the Senate Committee on Environment and Public Works, and is not identical with CBO's definition of current policy, which adjusts the most recent level of spending for predicted levels of inflation.

2. The House bill would also raise an additional $1.1 billion per year to finance mass transit capital grants. This additional increase--equivalent to a further increase of one cent per gallon in the tax on motor fuels--would represent a major change from past uses of highway user fees.

3. Completion by 1990 would be possible only if inflation was lower than projected by CBO, if states voluntarily withdrew more of the Interstate system for transit or other highway projects than assumed by CBO, and if certain other technical assumptions proved incorrect.

REDIRECTED FEDERAL ROLE

Instead of increasing funding to meet needs, as these are implied by current federal/state divisions of financial responsibility, the Congress may wish to consider a major change in the federal highway role in comparison to that of state and local governments. While federal, state, and local highway interests frequently overlap, highway programs vary in the extent to which they involve the national interest (see Table 9). Present Federal-Aid programs can be grouped into three broad categories:

- o Major intercity roads;
- o Other roads; and
- o Safety and other programs.

The national interest is predominantly reflected in the first category of programs--roads that link activities in different states and contribute to interstate commerce. The federal programs in this category are the Interstate system, the Primary system, and related parts of the bridge program. While some routes on the Primary system are not major intercity arteries, most Primary routes are significant intercity arteries: in rural areas they carry twice as much interstate traffic as does the Interstate system. For simplicity, all Primary routes are assumed to be maintained as a federal priority under the redirected federal role option.

The second group of programs includes the rest of the Federal-Aid system and some aid for roads not on the system. Federal spending accounts for only about 20 percent of total government capital spending on the Secondary and Urban systems. Although projects on these systems that are eligible for federal funds may receive at least a 75 percent federal match, the states build many projects using 100 percent state funds. Because states carry the bulk of the burden for these systems, federal aid has relatively little influence on the total amounts spent. Further, the Secondary and Urban systems are not restrictively defined. The Secondary, for example, includes 93 percent of all major rural roads in the country. In effect, these programs have many of the characteristics of revenue sharing. Rather than continue its modest role in financing these systems, the federal government might more effectively focus its resources on the Interstate and Primary systems where there is the clearest national interest, and where its financing now plays a dominant role.

The final group of programs represent a mix of safety, economic development, and special regional interests. While all levels of government share concern for safe highways, a more effective selection of projects could be made by state and local governments. Most of the non-safety programs in this category represent site-specific or special-purpose programs that do not fit well in a general realignment of highway programs such as that discussed here. In any case, the need for federal support is

TABLE 9. BASIC TYPES OF FEDERAL HIGHWAY PROGRAMS FINANCED BY THE HIGHWAY TRUST FUND

Program	Fiscal Year 1982 Authorizations (thousands of dollars)
Programs that Provide for Intercity Transport	
Interstate construction	3,225
Interstate repairs	800
Primary system	1,500
Part of bridge construction and reconstruction applied to Primary routes a/	400
Subtotal, intercity arteries	5,925
Other Roads	
Secondary system	400
Urban system	800
Part of bridge replacement and reconstruction applied to non-Primary routes	500
Subtotal, revenue sharing	1,700
Safety and Other Specialized Programs	
Rail-highway crossings	240
Pavement marking and hazard removal	265
Categorical safety programs	159
Emergency relief	100
Economic growth centers	50
Forest and other recreational roads	84
Interstate transfer grants for highways	113
Subtotal, other programs	1,011
Total	8,636 b/

a. Estimate based on proportion of fiscal years 1979-1981 Bridge Construction and Reconstruction Program funds that were obligated to bridges on the Interstate and Primary systems.

b. In addition, about $1 billion was authorized for highways from general funds.

certainly less compelling than it is for roads that interconnect the states and that carry significant components of intercity travel. In particular, the Interstate and Primary routes comprise only 8 percent of the nation's roads, but carry almost half the nation's traffic.

If existing federal highway resources were concentrated exclusively on these roads of greatest national importance, an immediate federal tax increase could be avoided while the funds provided would be adequate. By 1986, however, a tax increase would probably be required in order to ensure that the Highway Trust Fund would be able to meet its short-term obligations.

The redirected federal role option presented here would drop all but the Interstate and Primary systems and their related bridge projects (see Table 10). For these, the federal authorization levels would be increased significantly to meet estimated needs.

Ending federal participation in these non-national road systems--including Urban and Secondary (rural) roads, a large number of smaller grant programs, and local routes on the Interstate--would reduce federal expenditures for these roads by about $2.6 billion from the Highway Trust Fund and, in effect, reprogram these funds to meet the repair needs of the Interstate and Primary roads. The Administration's proposed New Federalism, while similar in concept, calls for a less dramatic reallocation of resources toward repair than shown in Table 10, and would have smaller authorizations. The Administration's approach would, however, turn part of the funds saved by program curtailments back to the states. This would make the transition more workable at the state level. If funds were not turned back to the states, the sudden end of federal assistance for Urban and Secondary routes would place strong financial pressures on many states until they were able to enact new user fees and programs of their own.

SUMMARY OF THE THREE PROGRAM OPTIONS

The average authorization levels over the next four years for these highway program options would range from $9.6 billion a year for the continuation of current spending to $10.5 billion for the redirected federal role option and $13.5 billion annually for the increased program option (see Table 11). These estimates are not fully comparable, since a redirected federal role implies a significant increase in state highway responsibilities and the resulting financial burden is not reflected in these federal totals. For those programs that it would fund--basically the Interstate and Primary systems--this option contains the largest level of authorization.

TABLE 10. FEDERAL HIGHWAY PROGRAM UNDER A REDIRECTED FEDERAL ROLE (In billions of current dollars)

Program	Federal Share of Needs (percent) a/	Average Annual Authorization 1983-1986	1982 Authorization
Completion of Interstate System by 1990	90	2.2 b/	3.2
Interstate Repair	90	2.9 c/	0.8
Interstate Reconstruction	25 d/	1.9 b/	
Primary	70	2.9 c/	1.5
Bridge Repair	70	0.6 e/	0.9
Secondary	0 d/	0	0.4
Urban	0 d/	0	0.8
Other	0 d/	0	1.0
Total		10.5	8.6

a. Department of Transportation, Final Report on the Federal Highway Cost Allocation Study (May 1982), p. IV-14.

b. Minimum Interstate construction option from Congressional Budget Office, The Interstate Highway System: Issues and Options (June 1982).

c. See Table 8.

d. Congressional Budget Office.

e. Includes only Interstate and Primary share of bridge program.

TABLE 11. COMPARISON OF MAJOR HIGHWAY OPTIONS

Area of Need	Average Annual Authorizations 1983-1986 (billions of dollars) Increased Spending Option	Current Spending Option	Redirected Federal Role a/
Completion of Interstate System by 1990	4.0	3.4	2.2
Interstate Repair	2.6	1.6	2.9
Interstate Reconstruction			1.9
Primary	2.2	1.6	2.9
Bridge Repair	1.7	1.2	0.6 b/
Secondary	0.6	0.5	0.0
Urban	0.8	0.7	0.0
Other c/	1.5	0.7	0.0
Total	13.5	9.6	10.5

NOTE: Totals may not add because of rounding.

a. Assumes turnback to states of all non-Interstate and non-Primary roads and non-Primary bridges.

b. For bridges on the Primary and Interstate systems only.

c. Interstate transfer grants, safety programs, development highways, etc.

CHAPTER V. EVALUATION OF THE OPTIONS

The three general approaches to highway policy outlined in the previous chapter would have substantially different implications in terms of long-run economic efficiency, the physical condition of the nation's roads, the federal budget, and state governments. To assess these differences, this chapter explores five questions:

- How well does each approach contribute to the most economically efficient transportation infrastructure?
- How well does each address the physical condition of the highways?
- What are the likely impacts on state and local governments?
- How much would highway user taxes increase, and what would be the effects of that increase?
- What would be the impact on the federal deficit?

CONTRIBUTION TO ECONOMIC EFFICIENCY

The most important reason for concern with the condition of the nation's roads is that they are vital to long-run economic efficiency. To the extent that key national routes are in poor condition, the costs of commerce will be higher; and as some economic activities are discouraged or become more expensive, the overall output of goods and services will be reduced. But conversely, overinvestment in federal highways would divert resources from private investment and impose an unnecessary burden on the economy. The question is what highway program would best support the private economy, regional needs, and defense requirements. The answer to this question can be framed in terms of: (1) the magnitude of the investment, (2) how the investment is allocated among different areas of highway need, and (3) who pays for it. These issues are judgmental; but to the extent that economic efficiency is the goal, a clear operating principle emerges--that users should pay the full cost of the highway services provided them.

In the aggregate, users would eventually pay the full cost of all the highway options considered here. However, the options are not equal in the way they distribute these costs across time. This is because a continuation of the current spending pattern would defer addressing the problem of highway repair. As roads continued to deteriorate and repair costs rose

markedly, this option could impose costs on future highway users that would be considered uneconomic and unfair.

There is an important corollary to this full-cost recovery principle: the share of cost paid by each class of user should be in proportion to the cost it imposes on the highway system. Under the current program, one class of users in effect subsidizes another. For example, heavy trucks pay less taxes in proportion to the wear they impose on the highway system, while light trucks pay more. If both paid in equal proportion, the result would be greater perceived fairness in highway taxes and a modest improvement in efficiency in the distribution of goods and services.

The increased spending option appears to offer the best prospect for correcting these inequities. The higher federal taxes it would require could be structured in a way that made payment proportional to cost imposed for each class of user. By contrast, the reduced federal role would leave much of the necessary adjustment to individual states. There is no assurance that the resulting distribution of cost recovery would either be uniform among the states or applied in the most economic manner.

Finally, decisions regarding highway investments that are not of strictly federal interest are best made by the jurisdictions closest to the problem--the states. If roads of local interest are not sufficiently attractive for states to invest in them, there is no economic reason why the federal government should influence this choice. Among the alternatives addressed here, the reduced federal role best matches decisionmaking with the level of government having the most information and interest in the decisions.

EFFECT ON THE PHYSICAL CONDITION OF THE HIGHWAYS

Highways do not wear out at a uniform rate. Pavements can deteriorate as much in their last several years of life as in the first 10 or 15 years. If repairs are postponed until too late in a road's life cycle, the long-term costs can greatly exceed any short-term savings. While this critical point is difficult to mark with precision, once a road declines to poor or fair condition, the costs of restoring it escalate rapidly. Thus a second criterion for evaluating the three approaches to highway policy is their effect on the physical condition of the nation's road network.

Current Spending Option

Current federal spending cannot adequately address highway problems unless state and local governments greatly increase their own highway spending. A significant real increase in state and local spending appears unlikely given the insensitivity of motor fuel taxes to inflation and the difficulties in raising these or other taxes. Further, as long as federal policy for highways remains unresolved--with programs and plans far beyond the

reach of federal funds--the states will probably not begin the major readjustments that would be required if current policy were to be continued into future years.

Increased Program

The increased program option would come close to putting dollars where the greatest problems are. While highway needs cannot be precisely gauged, spending of about $15 billion a year appears adequate to pay the federal share of repairs to the nation's highways and to complete the Interstate system. The option assumes annual authorizations of $13.5 billion over the next four years. While somewhat less than what appears to be needed, this approach substantially meets the federal share of the problem, particularly if authorization levels continue to be adjusted for inflation. It must be remembered, however, that it assumes a corresponding increase in state and local funding if real progress is to be made.

Nonetheless, the major increase in federal funds allotted to Interstate repair may still be inadequate since current law permits the use of some of it for construction work that has been dropped from the definition of the Interstate system. This new use will probably divert some portion of these funds away from repair work. For example, if states were to apply half of the Interstate repair funds to this new category, the balance would be enough for only 45 percent of repair needs on the Interstate system.

Redirected Federal Role

The redirected federal role option would perform quite well for those programs that would be retained by the federal government. It is the only option of the three discussed here that would permit completion of the Interstate by 1990 and provide adequate funds for repair of the Interstate and Primary systems. However, it would place the full burden for the Secondary and Urban roads on state and local governments. For them to meet these needs fully would require an average increase in their highway taxes equivalent to about 2.4 cents per gallon of motor fuel.

STATE AND LOCAL IMPACTS

Under all three program options, state and local governments would continue to face strong highway financing pressures. Each option assumes that state and local governments continue, and in some cases expand their current financial roles. Even under an increased federal program, state spending on the Federal-Aid system is assumed to increase by 50 percent. In addition, states face impressive demands to maintain roads and bridges that are not part of the Federal-Aid system. These demands exist even though most states have raised their highway taxes since the last increase in

federal highway user fees. (Appendix C shows the current fuel tax in each state and the most recent increase.)

Increased Program Option

The increased program level approach would offer the greatest aid to state highway departments since it would provide the most funding for Secondary and Urban roads. Since state and local governments already build some projects on these systems using only state funds, most states would be readily able to provide matching funds for their share of the increased program levels.

Redirected Federal Role

A reduced federal role would place a significant additional strain on state governments, since they would need to replace almost $2.6 billion in federal aid now spent for roads of lesser rank than the Primary system. Some states might decide not to replace all of these funds. This burden would not be offset by the increase in federal funding for Interstate and primary roads (roughly $4.5 billion a year), since state highway departments now spend little on these roads beyond that required to match federal spending. As a result, state governments would either have to make up entirely the $2.6 billion in diminished federal aid for Secondary and Urban routes, or else let the condition of these systems deteriorate. Because fewer federal financial regulations would apply to these projects when state-only funds were used, the states would probably achieve some savings through faster and less costly project completion. Also, as the condition of the Interstate and Primary systems improved, some traffic might be diverted from the Secondary and Urban routes. Even with these likely gains in efficiency, however, the states would face large additional financing needs if they were given full responsibility for Secondary and Urban roads without any corresponding increase in revenues.

The financial burden on state and local governments could be reduced substantially if additional tax resources were made available to them. As discussed in the next section, such a turnback could be provided through a temporary increase in the federal tax on motor fuel sufficient to generate $2.6 billion a year. As this tax was phased out, state and local governments could increase their highway fees in order to maintain their current level of spending.

IMPLICATIONS FOR HIGHWAY TAXES

Each of the three options discussed here is assumed to increase highway spending in future years. Because the receipts from current highway user taxes will grow very slowly throughout the 1980s, increased highway user